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COMPLETE SPECIFICATION

A New and Improved Device for the Removal of Shavings from Splitting and Cutting Machines

We, FORTUNA-WERKE SPEZIALMASCHINEN-FABRIK A.G., a German Company of Stuttgart-Bad, Cannstatt, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a new and improved device for the removal of shavings from the vicinity of the operative part(s) of splitting and cutting machines, particularly though not necessarily exclusively machines having band or belt knives and adapted to operate upon materials such as leather, rubber, felt and synthetic resins.

It is well known that in the operation of splitting and cutting machines, besides certain quantities of dust and crumbled waste products which do not interfere with their operation, there are produced large quantities of thin waste pieces with areas of from a fraction of a square centimetre up to hundreds of square centimetres, or band-shaped shavings of several metres of length. The removal of these large-area or band-shaped waste products has hitherto caused great difficulties. Frequently they either jam between a feeder roller and the knife, or—owing to their natural curvature, roughness, moisture or electrical charges generated by the working operation—they adhere to the feeder roller and roll around it, with the result in either case that the working of the machine is disturbed.

In machines having feeder rollers unsuccessful attempts have been made to remove these waste products from the roller by means of scrapers, or of fixed and/or rotating brushes. It has also been attempted to blow them off by means of a current of compressed air; though the waste products can in fact be removed from the feeder roller in this way they then swirl around in the interior of the machine casing and are deposited un-

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controllably in an undesirable manner at other points where they may likewise interfere with the operation of the machine. Direct sucking-off cannot be carried out since the tape-like shavings, which may be 50 metres in length, coil up and tear on the workpiece, the speed of treatment of which is smaller than the speed of revolution of the suction fan; while on the other hand the large-area pieces stick to the vanes of the 55 suction fan and so reduce its efficiency. As is well known, when the waste products are caught in a dust-bag, as in an ordinary vacuum cleaner, the suction power diminishes with increasing congestion of the dust-bag, 60 so that the waste products cannot be detached from the feeder roller with certainty, and thus the effectiveness of such a method cannot be continuously maintained. If continuously good work is to be attained with such a 65 machine, a strong suction current must be constantly maintained.

According to the invention, we overcome these disadvantages of previous methods by providing a device for removing shavings 70 from the vicinity of the operative part(s) of a cutting or splitting machine, comprising means for creating a suction current of air in the vicinity of said operative part(s) which will entrain said shavings, and means for 75 disentraining said shavings by deflecting the path of the current of air away from a substantially unobstructed path followed by said shavings.

According to one preferred embodiment of 80 the invention a reduced pressure is generated in a vacuum chamber with an attached collector container for the shavings, by means of a suction blower. The shavings are sucked off by means of a suction nozzle partly 85 embracing the feeder roller and formed on or by the end of a suction conduit leading to the vacuum chamber, and are introduced into the vacuum chamber in such a manner that owing to their inertia they are thrown 90

out of the path of the current of suction air, which is deflected within the suction chamber from its direction, and so the waste products can settle in the collector container for the shavings.

The current of suction air is accordingly deflected from the direction in which the shavings are carried along by the current of suction air, and its velocity is reduced, only after flowing through a coarse-mesh screen serving for smoothing the air flow and protecting the blower against shavings incidentally carried along when the collector container for the shavings is filled, the velocity is again increased in the suction duct of the blower.

The suction duct is in air tight communication with the vacuum chamber. Below the vacuum chamber the collector container for the shavings is arranged which is connected to it in an air tight manner, but detachably. The upper portion of the vacuum chamber is separated from its lower portion by a coarse mesh screen or the like. The vacuum is generated by means of a suction blower the suction part of which is connected to the upper portion of the vacuum chamber. Into the lower portion of the vacuum chamber the suction conduit is introduced with a downwards slope, opposed to the flow of suction air in the vacuum chamber, so that all shavings when emerging from the suction conduit into the vacuum chamber are thrown out of the path of the current of suction air owing to their inertia, and reach the bottom of the collector container for the shavings, while the suction air is deflected upwardly and owing to the enlarged cross-section area flows firstly slowly through the coarse mesh screen and then quickly through the blower into the open air.

Also the greatest part of the more dust-like waste products is deposited in the collector container for the shavings. The remainder of the dust is so little that for its removal no filter or the like is required. In case the collector container for the shavings is completely filled and a large area waste piece is swirled upwardly with the suction air, it hits the coarse mesh screen and accordingly cannot reach the vanes of the blower, and therefore soon drops off downwardly owing to the reduced velocity of air.

The suction nozzle is so designed that the entrance to the nozzle on the side of the roller entering the nozzle on rotation, is larger than the entrance to the nozzle on the side of the roller leaving the nozzle on rotation. Thereby the often comparatively large waste pieces are allowed admittance into the suction nozzle; moreover it is attained ther by that all the waste pieces are safely pulled into the suction nozzle.

Should they stick for any reason to the feeder roller while within the suction nozzle

they are pulled off the feeder roller in the zone of the feeder roller leaving the suction nozzle on rotation, by the opposite air current entering into the suction nozzle at this point.

The particular advantage of the new method and/or new appliance consists in that with the simplest means much improved results are guaranteed. With the greatest economy and dispensing with the otherwise usual dust-bag a substantially constant suction force is attained at the suction nozzle and at the same time the vanes of the blower are protected from detrimental influences by the waste pieces.

One preferred embodiment will now be described with reference to the accompanying drawings, in which:—

Fig. 1 shows a diagram of the whole appliance;

Fig. 2 shows the construction and manner of operation of the suction nozzle.

A work piece 1 is supplied below a guide bar 2 to a knife 3 of a splitting or cutting machine by means of a feeder roller 4. While the treated part 5 of the work piece 1 is carried away upwardly a waste shaving 6a adheres to the feeder roller 4. Should a waste piece 6b prematurely detach itself from the feeder roller 4 it is drawn by the suction current in the suction nozzle 7 into the enlarged zone 7a thereof.

Should a waste piece 6c not detach itself from the feeder roller within the suction nozzle, it is pulled off the feeder roller by the counter current in the narrow zone 7b. All the waste pieces are passed through the suction conduit 8 into the lower portion 9 of the vacuum chamber 10 where they drop at high speed into the collector container 11 for the shavings. The collector container 11 for the shavings is attached in an air tight manner but detachably to the vacuum chamber at 12. The upper portion 13 of the vacuum chamber is separated from the lower portion 9 by a coarse mesh screen 14. A blower 15 with motor 16 is connected with its suction socket 17 to the upper portion 13 of the vacuum chamber. The pressure socket 18 of the blower 15 issues into the open atmosphere.

What we claim is:—

1. A device for removing shavings from the vicinity of the operative part(s) of a cutting or splitting machine, comprising means for creating a suction current of air in the vicinity of said operative part(s) which will entrain said shavings, and means for disentraining said shavings by deflecting the path of the current of air away from a substantially unobstructed path followed by said shavings.

2. A device according to Claim 1, wherein the means for disentraining the shavings from the suction current comprise a suction

conduit from one end of which air is withdrawn in a direction at an angle to the path of the conduit.

3. A device according to Claim 2, wherein
5 the other end of said suction conduit is provided with a suction nozzle arranged and disposed so as partly to embrace a feeder roller of the cutting machine.

4. A device according to Claim 2 or 3,
10 wherein said one end of the suction conduit is arranged in a vacuum chamber.

5. A device according to Claim 4, wherein a collector container is connected to the vacuum chamber.

15 6. A device according to Claim 5, wherein said collector container is detachably connected to the vacuum chamber in an air tight manner.

7. A device according to any of the previous claims, wherein the suction current, after deflection from the path followed by the shavings, passes through a coarse mesh screen and thence through a suction blower to the atmosphere.

8. A device according to Claim 4 or any
25 claim dependent thereon, wherein the suction conduit slopes downwardly on its entry into the vacuum chamber, to which it is connected in an air-tight manner, and wherein suction means are so arranged as to withdraw air
30 from the mouth of the suction conduit in an upward direction.

9. A device according to Claim 3 or any claim dependent thereon, wherein the suction nozzle is so arranged that the entrance to the
35 nozzle on the side of the roller entering the nozzle on rotation, is larger than the entrance to the nozzle on the side of the roller leaving the nozzle on rotation.

10. A device for removing shavings from
40 the working area of a cutting or splitting machine, substantially as herein described with reference to the accompanying drawings.

A. A. THORNTON & CO.,

Chartered Patent Agents,

Napier House,

24/27, High Holborn, London, W.C.1,

For the Applicants.

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FIG.1

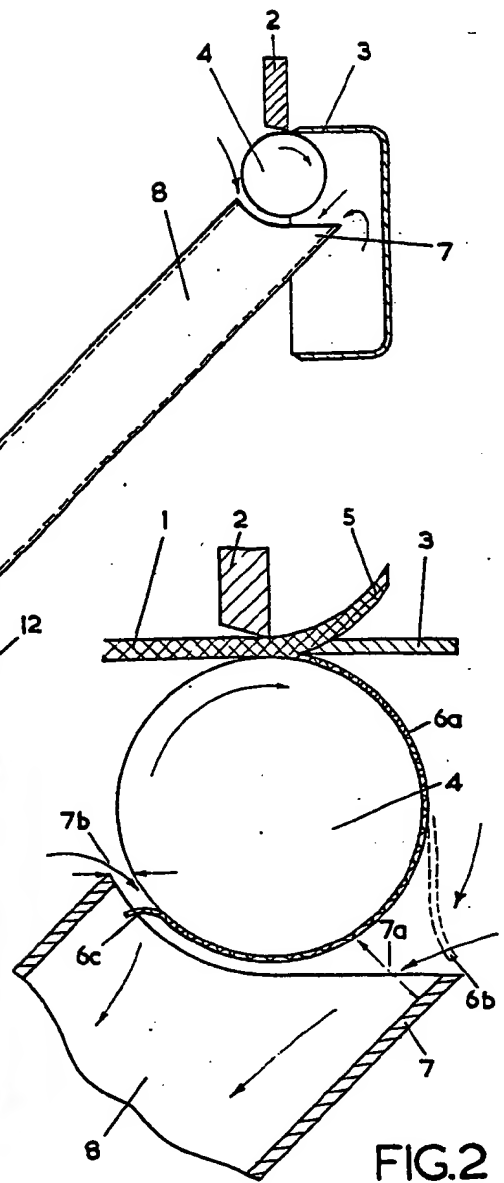
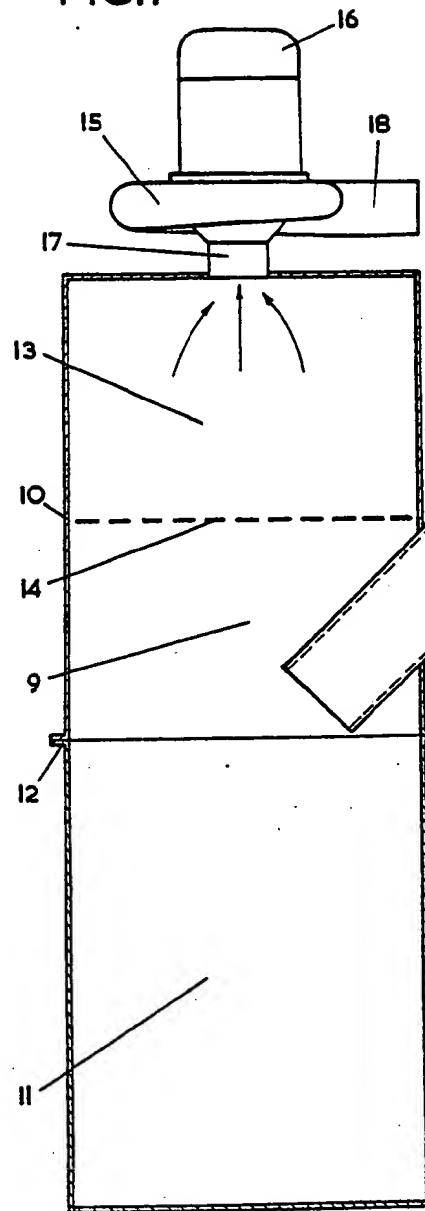


FIG.2